

## NASA Briefs

### Small items can have big education impact

Got any extra 2-liter bottles or paper towel tubes? Here's your chance to "recycle" them for education. The Education and Information Services Branch of the Public Affairs Office is looking for these recyclable items for its summer teacher workshops. The 2-liter plastic bottles will be used for making water rockets and are needed prior to June 15. A variety of materials will be needed by July 2 to show teachers how to help their elementary students build Mars bases. These include, but are not limited to: toilet paper cardboard tubes, paper towel cardboard tubes, plastic covers from food trays, small plastic bottles, 35mm film canisters, straws, plastic cylinders from tape dispensers, leftover green indoor/outdoor carpet strips and cardboard boxes in small or medium sizes. Drop your contributions in the office of the workshop coordinator, Norma Rhoads, Bldg. 2, Rm. 164.

### Solar observer sees magnetic energy

The first images from NASA's Transition Region and Coronal Explorer spacecraft reveal activity in the solar atmosphere in stunning detail and include the first detailed observations of a magnetic energy release, called a magnetic reconnection. The magnetic reconnection was observed on May 8 in a region of the solar atmosphere where two sets of perpendicular magnetic loops expanded into each other. Magnetic reconnection occurs when magnetic fields "snap" to a new, lower energy configuration, much like when a twisted rubber band unwinds or breaks. A magnetic reconnection can release vast amounts of energy and is responsible for explosive events such as flares, that can cause communication and power disruptions on Earth.

### Ships, satellites, planes study Arctic

An ice-breaking ship, research airplanes, space satellites and an international team of scientists are converging in the Alaskan Arctic this month to learn more about global climate change through the study of clouds and radiation of the Sun during the spring and summer. The First International Satellite Cloud Climatology Project Regional Experiment/Arctic Cloud Experiment is studying a variety of cloud systems in a two-phase campaign April 7-June 13 and July 6-30. FIRE is led by NASA, in collaboration with other government and private organizations, and will take place in Alaska in the Beaufort Sea and in the skies over the coastal town of Barrow. "The data from FIRE/ACE will provide the opportunity to greatly expand our knowledge of the Arctic climate—an important component in any global climate change scenario," said Dr. Patrick Minnis, FIRE project scientist.

# Surveyor finds evidence of early Mars water

New mineralogical and topographic evidence suggesting that Mars had abundant water and thermal activity in its early history is emerging from data gleaned by NASA's Mars Global Surveyor spacecraft.

Scientists are getting more glimpses of this warmer, wetter past on Mars while Global Surveyor circles the planet in a temporary 11.6-hour elliptical orbit. Findings from data gathered during the early portions of this hiatus in the mission's orbital aerobraking campaign are being presented at the spring meeting of the American Geophysical Union in Boston.

Among many results, the Thermal

Emission Spectrometer instrument team, led by Dr. Philip Christensen of Arizona State University, Tempe, has discovered the first clear evidence of an ancient hydrothermal system. This finding implies that water was stable at or near the surface and that a thicker atmosphere existed in Mars' early history.

Measurements from the spectrometer show a remarkable accumulation of the mineral hematite, well-crystallized grains of ferric (iron) oxide that typically originate from thermal activity and standing bodies of water and may be responsible for Mars' rusty coloration. This deposit is localized near the Martian equator, in an area approximately 300

miles (500 kilometers) in diameter.

Meanwhile, the Mars Orbiter Laser Altimeter instrument is giving mission scientists their first three-dimensional views of the planet's north polar ice cap. Principal Investigator Dr. David Smith of Goddard Space Flight Center and his team have been using the laser altimeter to obtain more than 50,000 measurements of the topography of the polar cap in order to calculate its thickness, and learn more about related seasonal and climatic changes.

These initial profiles have revealed an often striking surface topology of canyons and spiral troughs in the water and carbon

dioxide ice that can reach depths as great as 3,600 feet below the surface. Many of the larger and deeper troughs display a staircase structure, which may ultimately be correlated with seasonal layering of ice and dust observed by NASA's Viking mission orbiters in the late 1970s.

In addition, the Global Surveyor accelerometer team, led by Dr. Gerald Keating of George Washington University, Washington, D.C., has discovered two enormous bulges in the upper atmosphere of Mars in the northern hemisphere, on opposite sides of the planet. These bulges rotate with the planet, causing variations of nearly a factor of two in atmospheric pressure.



JSC Photo by Hector Gongora

**GUEST VOCALS—JSC Director George Abbey, left, talks with radio talk show host Tom Tynan during the JSC Electrical Safety Fair. Tynan hosts a KTRH Radio program on home improvement, and Abbey and other JSC officials took part in the radio program by way of a live broadcast from the Gilruth Center.**

## JSC looking for American Heritage Week volunteers

JSC is looking for volunteers to help with preparations for the fifth annual American Heritage Week observance July 6-10. This year's theme is "Celebrating the Past, Pioneering the Future."

What started as a one-day celebration presented by JSC civil servant employees in 1994, is now a week-long celebration presented by "TEAM NASA," the ongoing partnership between JSC civil service employees, contractor employees, and the Clear Lake community.

American Heritage Week celebrates the similarities that bring individual members of TEAM NASA together, while simultaneously celebrating the differences through which we learn and grow together.

This year's celebration will include performances throughout the week in the Bldg. 3 cafeteria, and a grand finale July 10 at the Gilruth Center. The finale will offer simultaneous performances in both the ballroom and gym.

Volunteers are still needed for a variety of tasks. To sign up call Pat Burke at x30606. Those who would like to help promote American Heritage Week as Town Criers and dress up in an appropriate costume of their own design should call, June Bennett Larson at x36080. Employees may volunteer as many hours as they wish—or as few as they can spare.

## Russia affirms new station is its top civil space priority

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son capability is planned in November 2002. And the final launch in the assembly sequence is set for January 2004, only one month later than in the previous assembly plan. Some issues in this assembly sequence remain under review and will be resolved at a Space Station Control Board meeting in September.

NASA continues the development of an Interim Control Module as a contingency against further delays in the Service Module and as a poten-

tial additional propellant capability for a more robust space station. A decision concerning the configuration of the Interim Control Module will be made later this year.

During the heads-of-agency meeting, the Russian Space Agency stated that the Russian government has made the International Space Station its number one civil space priority. RSA noted that progress on the Service Module continues to meet a launch in April 1999.

RSA also is working to deorbit Mir

as early as is safely possible, with a goal of developing a potential to deorbit by July 1999. The international partners expressed their concern with delays to the International Space Station program to date and brought to the attention of RSA that it is critical to all participating nations that the space station program schedule is met.

The agencies' leaders also acknowledged the atmosphere of cooperation, the accomplishments and the successful achievements of

the shuttle-Mir program and said they look forward to the smooth transition to Phases 2 and 3 of the International Space Station. In addition, they highlighted the ongoing International Space Station training currently under way for the first four station crews.

Full details of the current International Space Station Assembly Sequence, Revision D, are available in a NASA fact sheet. The fact sheet may be obtained from the internet at the International Space Station Web at <http://station.nasa.gov>.

## STS-91 marks end of learning period, start of construction

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flight; while Mission Specialist Wendy Lawrence will be making her fourth flight. Mission Specialist Franklin Chang-Díaz, making his sixth flight, and Mission Specialist Janet Kavandi, on her first flight, round out the astronaut crew. Russian Valery Ryumin will be making his fourth space flight, this one as a shuttle mission specialist.

Precourt, an Air Force colonel, has made two previous visits to Mir. This flight, he said marks the end of the International Space Station's

Phase 1 Program and the beginning of Phase 2, the assembly of the station. For the return trip from Mir, *Discovery* will be joined by Thomas, who went aboard Mir from STS-89 launched last January.

The Phase 1 Program, by maintaining a continuous American presence in space and developing the procedures and hardware required for an international partnership in orbit, has produced priceless lessons in both long-duration space flight and the kind of international cooperation that will be required to build the

international orbiting outpost.

A single Spacehab module will be in *Discovery's* cargo bay, carrying a variety of supplies and equipment to Mir. In addition, astronauts will test a new system called the Spacehab Universal Communication System, or SHUCS, that can be used to send and receive voice commands and faxes, as well as provide video images of the crew from the Spacehab module.

SHUCS will test the improved availability of payload uplink and downlink communications with the

ground. On STS-91, the crew will have scheduled voice and fax contacts that are pre-approved by the Flight Control Team. SHUCS "roundtrip" latency of 0.7 - 1.2 seconds allows file transfer, commanding, up/downlink fax and voice communications globally via three ground stations and four satellites.

Assuming a June 2 launch at about 5:10 p.m. CDT, (within the seven to 10 minute launch window) the landing was scheduled at Kennedy Space Center the afternoon of June 12.

## When address is clear, mail gets there better

JSC's Mail and Distribution Center is seeking help from all employees to increase the efficiency of deliveries around the site and to off-site locations.

With the many recent changes in JSC mail codes, the mailroom suggests that everyone use the on-line telephone book to verify they are using the correct address before they slip their envelope into the "out" box. This simple idea could save several days delay for incorrectly addressed mail. To access the on-line directory, go to: <http://www4.jsc.nasa.gov/>

Employees should remember that mail cannot be delivered by building location. Mail that is not clearly marked with a JSC mail code must be researched to determine the correct

address, often delaying delivery by several days. Employees also should remember to include their mail codes when supplying their JSC address to vendors and other organizations outside of JSC

In another cost-saving measure, the Space News Roundup this issue begins using an automated presorting system for distribution to retirees and other off-site delivery locations. A small blank area at the bottom of Page 8 will be left open for addressing purposes and used by the JSC mail room to address and presort the Roundup. The new addressing equipment, purchased by the IMPASS contract, is expected to allow the center to save a substantial amount of postage costs.

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Editor ..... Kelly Humphries

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